WHAT IS CLAIMED IS:

1. In a digital carrier loop network comprising a plurality of switching nodes, a network termination, and a subscriber termination coupled to each other via communication links, a method for establishing a cross-connection between the network termination and the subscriber termination for transporting TDM traffic from the network termination to the subscriber termination, the method comprising:

determining a network path between the network termination and the subscriber termination comprising a series of switching nodes, the series of switching nodes including a first switching node coupled to the network termination, a last switching node coupled to the subscriber termination and intermediate nodes between the first switching node and the last switching node;

determining bandwidth requirements for supporting the cross-connection between the network termination and the subscriber termination;

configuring a first data structure at the first switching node based on the bandwidth requirements, the first data structure storing switching and bandwidth allocation information for connecting the first switching node to the network termination and to an intermediate switching node coupled with the first switching node, the switching information including last switching node identification information;

configuring an intermediate data structure at each of the intermediate switching nodes based on the bandwidth requirements and on the information stored in the data structures of the previous switching node in the series of switching nodes , the intermediate data structure storing switching and bandwidth allocation information for connecting the intermediate switching node to the previous switching node and to the next switching node in the series of switching nodes, the switching information including last switching node identification information;

configuring a last data structure at the last switching node based on the bandwidth requirements and on the information stored in the data structure of an intermediate switching node coupled with the last switching node, the last data structure storing switching and bandwidth allocation information for connecting the last switching node to the switching node coupled with the second switching node and to the subscriber termination;

encapsulating the TDM traffic in ATM cells; and

transporting the ATM cells between the network termination and the subscriber termination via the series of switching nodes using the information stored in the data structures at the switching nodes such that the ATM cells are switched at the switching nodes using ATM switching while bypassing TDM switching.

2. The method of claim 1 wherein determining the network path between the network termination and the subscriber termination comprises:

determining all possible network paths between the network termination and the subscriber termination;

determining number of switching nodes in each of said possible network paths; and

selecting the network path from said possible network paths having the least number of switching nodes.

3. The method of claim 2 wherein selecting the network path further comprises selecting the network path having the highest available bandwidth if more than one network paths have the same number of switching nodes.

4. The method of claim 1 wherein determining the bandwidth requirements comprises:

providing a network managing station coupled with the first switching node; and

receiving the bandwidth requirements for the cross-connection at the network managing station.

5. The method of claim 1 wherein each data structure configured at the first, intermediate, and last switching nodes includes at least one bandwidth block corresponding to an ATM cell to be transported via the switching node, the method further comprising:

storing the switching and bandwidth allocation information for the switching node in the bandwidth allocation block, the switching information including the last switching node identification information; and

performing switching and bandwidth allocation of the ATM cell according to the switching and mapping information stored in the bandwidth block, wherein the last

switching node identification information identifies the switching node to which the ATM cell is to be transported.

6. The method of claim 5 wherein configuring the data structure at each of the switching nodes comprises:

identifying a number of bandwidth blocks for supporting the cross-connection based on the bandwidth requirements of the cross-connection;

for each identified bandwidth block, determining the bandwidth allocation information, the bandwidth allocation information indicative of bandwidth to be allocated for the cross-connection from the ATM cell corresponding to the bandwidth block;

for each identified bandwidth block, determining a virtual path identifier and a virtual channel identifier value for performing ATM switching at the switching node; and

for each identified bandwidth block, storing the bandwidth allocation information, the virtual path identifier value and the virtual channel identifier values in the bandwidth block.

7. In a digital carrier loop network comprising a plurality of switching nodes, a network managing station, a network termination, and a subscriber termination coupled to each other via communication links, a system for establishing a cross-connection between the network termination and the subscriber terminal for transporting TDM traffic from the network terminal to the subscriber terminal, the system comprising:

the network managing station configured to determine a network path between the network termination and the subscriber termination for the cross-connection, the network path comprising a series of switching nodes coupled with the network termination and the subscriber termination, the series including a first switching node coupled with the network termination, a last switching node coupled with the subscriber termination, and intermediate switching nodes between the first and last switching nodes, wherein each of the switching nodes including a memory and a processor;

the network managing station further configured to determine the bandwidth requirements for the cross-connection and to communicate the bandwidth requirements to the series of switching nodes in the network path;

the first switching node is configured to determine switching and bandwidth allocation information, based on the bandwidth requirements, for connecting the first switching node to the network termination and to an intermediate switching node coupled with the first switching node, the switching and bandwidth allocation information being stored in a first data structure in the memory of the first switching node, the switching information including last switching node identification information;

each of the intermediate switching nodes is configured to determine switching and bandwidth allocation information, based on the bandwidth requirements, for connecting the intermediate switching node to the previous switching node and to the next switching node in the series of switching nodes, the switching and bandwidth allocation information being stored in an intermediate data structure in the memory of the intermediate switching node, the switching information including last switching node identification information;

the last switching node is configured to determine switching and bandwidth allocation information, based on the bandwidth requirements, for connecting the last switching node to the subscriber termination and to an intermediate switching node coupled with the last switching node, the switching and bandwidth allocation information being stored in a last data structure in the memory of the last switching node; and

the switching nodes are configured to transport the ATM cells, encapsulating the TDM traffic, from the network termination to the subscriber termination using the switching and bandwidth allocation information contained in the data structures stored in the memories of the switching nodes such that the ATM cells are switched at the switching nodes using ATM switching while bypassing TDM switching.

8. The system of 7 wherein in order to determine the network path, the network managing station is configured to determine all possible network paths between the network termination and the subscriber termination, to determine number of switching nodes in each of said possible network paths, and to select the network path from the possible network paths by selecting the network path having the least number of switching nodes.

9. The system of claim 8 wherein the network managing station is further configured to select the network path having the highest available bandwidth if more than one network paths have the same number of switching nodes.

10. The system of claim 7 wherein each data structure stored in the memories of the first, intermediate, and last switching nodes contains at least one bandwidth block corresponding to an ATM cell to be transported via the switching node, the bandwidth block storing the switching and bandwidth allocation information for the switching node, the information defining the bandwidth allocation and switching characteristics for the ATM cell, the switching information including the last switching node identification information identifying the switching node to which the ATM cell is to be transported.

11. The system of claim 10 wherein each switching node is further configured to identify a number of bandwidth blocks for supporting the cross-connection based on the bandwidth requirements of the cross-connection, for each identified bandwidth block each switching node is configured to determine the bandwidth allocation information, the bandwidth allocation information indicative of bandwidth to be allocated for the cross-connection in the ATM cell corresponding to the bandwidth block, to determine a virtual path identifier and a virtual channel identifier value for performing ATM switching at the switching node, the switching node configured to store the bandwidth allocation information, the virtual path identifier value, and the virtual channel identifier value in the bandwidth block.

12. In a digital carrier loop network comprising a plurality of switching nodes, a network termination, and a subscriber termination coupled to each other via communication links, a computer program product for establishing a cross-connection between the network termination and the subscriber termination for transporting TDM traffic from the network termination to the subscriber termination, the product comprising:

code for determining a network path between the network termination and the subscriber termination comprising a series of switching nodes, the series of switching nodes including a first switching node coupled to the network termination, a last

switching node coupled to the subscriber termination and intermediate nodes between the first switching node and the last switching node;

code for determining bandwidth requirements for supporting the cross-connection between the network termination and the subscriber termination;

code for configuring a first data structure at the first switching node based on the bandwidth requirements, the first data structure storing switching and bandwidth allocation information for connecting the first switching node to the network termination and to an intermediate switching node coupled with the first switching node, the switching information including last switching node identification information;

code for configuring an intermediate data structure at each of the intermediate switching nodes based on the bandwidth requirements and on the information stored in the data structures of the previous switching node in the series of switching nodes , the intermediate data structure storing switching and bandwidth allocation information for connecting the intermediate switching node to the previous switching node and to the next switching node in the series of switching nodes, the switching information including last switching node identification information;

code for configuring a last data structure at the last switching node based on the bandwidth requirements and on the information stored in the data structure of an intermediate switching node coupled with the last switching node, the last data structure storing switching and bandwidth allocation information for connecting the last switching node to the switching node coupled with the second switching node and to the subscriber termination;

code for encapsulating the TDM traffic in ATM cells;

code for transporting the ATM cells between the network termination and the subscriber termination via the series of switching nodes using the information stored in the data structures at the switching nodes such that the ATM cells are switched at the switching nodes using ATM switching while bypassing TDM switching; and

a computer-readable storage medium for storing the codes.